

What is claimed is:

1 1. A supercapacitor structure comprising in contiguity a
2 positive electrode member, a negative electrode member, and a
3 separator member interposed therebetween

4 c h a r a c t e r i z e d i n t h a t

5 a) each of said electrode members comprises an activated
6 carbon fabric element to which is bonded an electrically-
7 conductive current collector element,

8 b) said separator member comprises a micro-fibrillar ultra-
9 high molecular weight polyolefin membrane, and

10 c) each said member is bonded to one or more contiguous
11 members at its respective interface to form a unitary flexible
12 laminate structure.

1 2. A supercapacitor structure according to claim 1 wherein
2 said polyolefin membrane comprises polyethylene.

1 3. A supercapacitor structure according to claim 1 wherein at
2 least one of said collector elements comprises an open-mesh
3 grid.

1 4. A supercapacitor structure according to claim 3 wherein
2 said collector element grids are thermally bonded to associated
3 carbon fabric by an electrically-conductive thermoadhesive
4 composition.

1 5. A supercapacitor structure according to claim 4 wherein
2 said carbon fabric electrode elements are thermally bonded to
3 the interposed separator member by virtue of the thermoadhesive
4 nature of said polyolefin membrane.

1 6. A method of making a supercapacitor structure which
2 comprises arranging contiguously a positive electrode member, a
3 negative electrode member, and a separator member interposed
4 therebetween

5 c h a r a c t e r i z e d i n t h a t

6 a) each of said electrode members is formed of an activated
7 carbon fabric element bonded to an electrically-conductive
8 current collector element,

9 b) said separator member is formed of a micro-fibrillar
10 ultra-high molecular weight polyolefin membrane, and

11 c) each said member is bonded to one or more contiguous
12 members at its respect interface to form a unitary flexible
13 laminate structure.

1 7. A method according to claim 6 wherein

2 a) at least one surface of each said collector element is
3 coated with a layer of electrically-conductive thermoadhesive
4 composition,

5 b) each fabric electrode element is arranged in surface
6 contact with the coated surface of its associated collector
7 element to form a subassembly, and

8 c) said subassembly is laminated under heat and pressure to
9 form a unitary electrode member.

1 8. A method according to claim 7 wherein
2 a) the exposed fabric surface of each said electrode member
3 is arranged in contact with a respective surface of said
4 separator member, and
5 b) said arrangement is laminated under heated and pressure
6 to soften at least said separator member surfaces and effect an
7 adhesive laminate bond between said members.